

PATENT COOPERATION TREATY

REC'D 24 MAY 2006

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PW/WY/sd 040047WO	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/IB2004/000378	International filing date (<i>day/month/year</i>) 13 - 02 - 2004	Priority date (<i>day/month/year</i>) -
International Patent Classification (IPC) or national classification and IPC See Supplemental Box		
Applicant Nokia Corporation et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. (*sent to the applicant and to the International Bureau*) a total of 7 sheets, as follows:

sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. (*sent to the International Bureau only*) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

<input checked="" type="checkbox"/>	Box No. I	Basis of the report
<input type="checkbox"/>	Box No. II	Priority
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application

Date of submission of the demand 24 - 08 - 2005	Date of completion of this report 11 - 05 - 2006
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer E. Westin /OGU Telephone No. +46 8 782 25 00

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/IB2004/000378

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Cover sheet

International patent classification (IPC)

G02B 6/00 (2006.01)

B29C 39/14 (2006.01)

B29D 11/00 (2006.01)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/IB2004/000378

Box No. I Basis of the report

1. With regard to the language, this report is based on:

- the international application in the language in which it was filed
 a translation of the international application into _____, which is the language of a translation furnished for the purposes of:
 international search (Rules 12.3(a) and 23.1(b))
 publication of the international application (Rule 12.4(a))
 international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- the international application as originally filed/furnished
 the description:
 pages 1 - 23 as originally filed/furnished
 pages* _____ received by this Authority on _____
 pages* _____ received by this Authority on _____
 the claims:
 pages _____ as originally filed/furnished
 pages* _____ as amended (together with any statement) under Article 19
 pages* 1 - 7 received by this Authority on 02 - 05 - 2006
 pages* _____ received by this Authority on _____
 the drawings:
 pages 1 - 6 as originally filed/furnished
 pages* _____ received by this Authority on _____
 pages* _____ received by this Authority on _____
 a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. The amendments have resulted in the cancellation of:

- the description, pages _____
 the claims, Nos. _____
 the drawings, sheets/figs _____
 the sequence listing (*specify*): _____
 any table(s) related to the sequence listing (*specify*): _____

4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- the description, pages _____
 the claims, Nos. _____
 the drawings, sheets/figs _____
 the sequence listing (*specify*): _____
 any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/IB2004/000378

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-32</u>	YES
	Claims	<u>33</u>	NO
Inventive step (IS)	Claims	<u>1-32</u>	YES
	Claims	<u>33-37</u>	NO
Industrial applicability (IA)	Claims	<u>1-37</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

New amended claims, 1-37, were filed with the letter of 02.05.2006.

This international preliminary examination according to the PCT is made on the basis of the application as originally filed.

The following documents (D1, D2) from the International search report are referred to in this communication:

D1 : ROSEWELL N A ET AL: "Flat panel virtual display" IEE PROCEEDINGS: OPTOELECTRONICS, INSTITUTION OF ELECTRICAL ENGINEERS, STEVENAGE. GB, vol. 149, no. 56, 11 November 2002 (2002-11-11), pages 189-192, XP006019262 ISSN: 1350-2433

D2: GB 468 893 A (THOMAS RALPH MERTON) 12 July 1937 (1937-07-12)

Additional document not cited in the International Search Report:

D3: US2002/130427 A1 (KABURAGI HIDETAKA ET AL) 19 September 2002 (2002-09-19)

INDEPENDENT CLAIMS 1, 26 and 32

According to the new amended independent claims 1, 26 and 32 there is provided a light guide a) wherein a light guiding substrate is provided as a foil, b) wherein diffractive gratings are embossed on at least one side of said foil by

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: **Box V**

1 (3)

rolling, c) wherein additional optical films are provided continuously from a bobbin, and partially laminated into said embossed foil after said rolling.

Document D3 is considered as the closest prior art.

Document D3 discloses (the references in parenthesis applying to this document):

A light guiding plate manufacturing apparatus wherein deflection patterns are embossed on large, e.g. polycarbonate, sheets by rolling (Section 12-21).

From document D3 it is known to manufacture a light guiding plate (section 1). The light guiding plate is provided with a dot pattern as diffractive grating (section 9). According to D3 using a resin substrate conveyed by a conveyer belt, sandwiched between two cylindrical rollers for molding, has the disadvantage of incorrect positioning of the substrate (section 14). Therefore, it was an object of the teaching of D3 to provide a method, which allows reducing manufacturing costs, when producing large-sized light guiding plates. For this reason, document D3 proposes a cylindrical roller, which moves a stamper having a dot pattern formed on its surface (section 17). The stamper is fixed in close contact with the cylindrical roller (section 36). The cylindrical roller rotates around the shaft. The roller is moved to and fro, such that the cylindrical roller rotates anticlockwise, when the carrier moves in the right direction, and that the roller rotates clockwise, when the carrier moves in the left direction (section 41).

The subject-matter of the independent claims differs from D3 in that a foil, feature a), is used to allow for a continuous rolling and that additional optical films are provided continuously from a bobbin, and are partially laminated onto said embossed foil after that rolling, feature c). Therefore the subject-matter of the independent claims is new with respect to D3.

According to D2 a foil is provided with gratings using acetone or other suitable solvents. Therefore, according to D2, no embossing by rolling is provided, rather the gratings are provided by diffusing the solvent and dispensing the solvent, so as to provide the gratings (p. 4, I. 20-40).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

2 (3)

The subject-matter of the independent claims differs from D2 in that an embossing using rolling is provided and that additional optical films are provided. Therefore, the subject-matter of the independent claims is also new with respect to D2.

Document D1 discloses (the references in parenthesis applying to this document):

A method of manufacturing a light guide, wherein a light guiding substrate is provided as an acrylic sheet (Section 6: "Prototype display") and wherein diffractive gratings are embossed on at least one side of said sheet (abstract).

The subject-matter of the independent claims differs from D1 in that D1 does not teach to provide a light guiding substrate as a foil according to feature a) (section 6). Instead, document D1 teaches using sheets of resin. Further, document D1 does not teach using rolling for embossing diffractive gratings according to feature b). Furthermore, the feature c) is also not provided according to D1.

The subject-matter of independent claims 1, 26 and 32 is therefore novel (Article 33(2) PCT) with respect to documents D1-D3 taken alone or in combination. Thus, The invention defined in claims 1-32 is not disclosed by any of these documents.

Furthermore, The cited prior art does not give any indication that would lead a person skilled in the art to the invention as defined in the independent claims. Therefore, the claimed invention is not obvious to a person skilled in the art. Accordingly, the invention defined in claims 1-32 is novel and is considered to involve an inventive step. The invention is industrially applicable.

INDEPENDENT CLAIM 33

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 33 is not new in the sense of Article 33(2) PCT.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

3 (3)

Documents D3 discloses (the references in parenthesis applying to this document):

A light guiding plate manufacturing apparatus wherein deflection patterns are embossed on large, e.g. polycarbonate, sheets by rolling (Section 12-21)

The further qualifier in claim 33 "foil" is not considered to be limiting to such a device claim, because it is not regarded as conferring any recognisable special physical quality to the finished product that can be distinguished from the product manufactured by a non-foil method. Therefore the subject-matter of claim 33 is not new in the sense of Article 33(2) PCT.

Dependent claims 34-37 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT), since the subject-matter therein is either known from, or rendered obvious by, the available prior art.